

Session IV: Climate Change and Green Business Opportunities

Notes on Biofuels Project Development & Methodologies

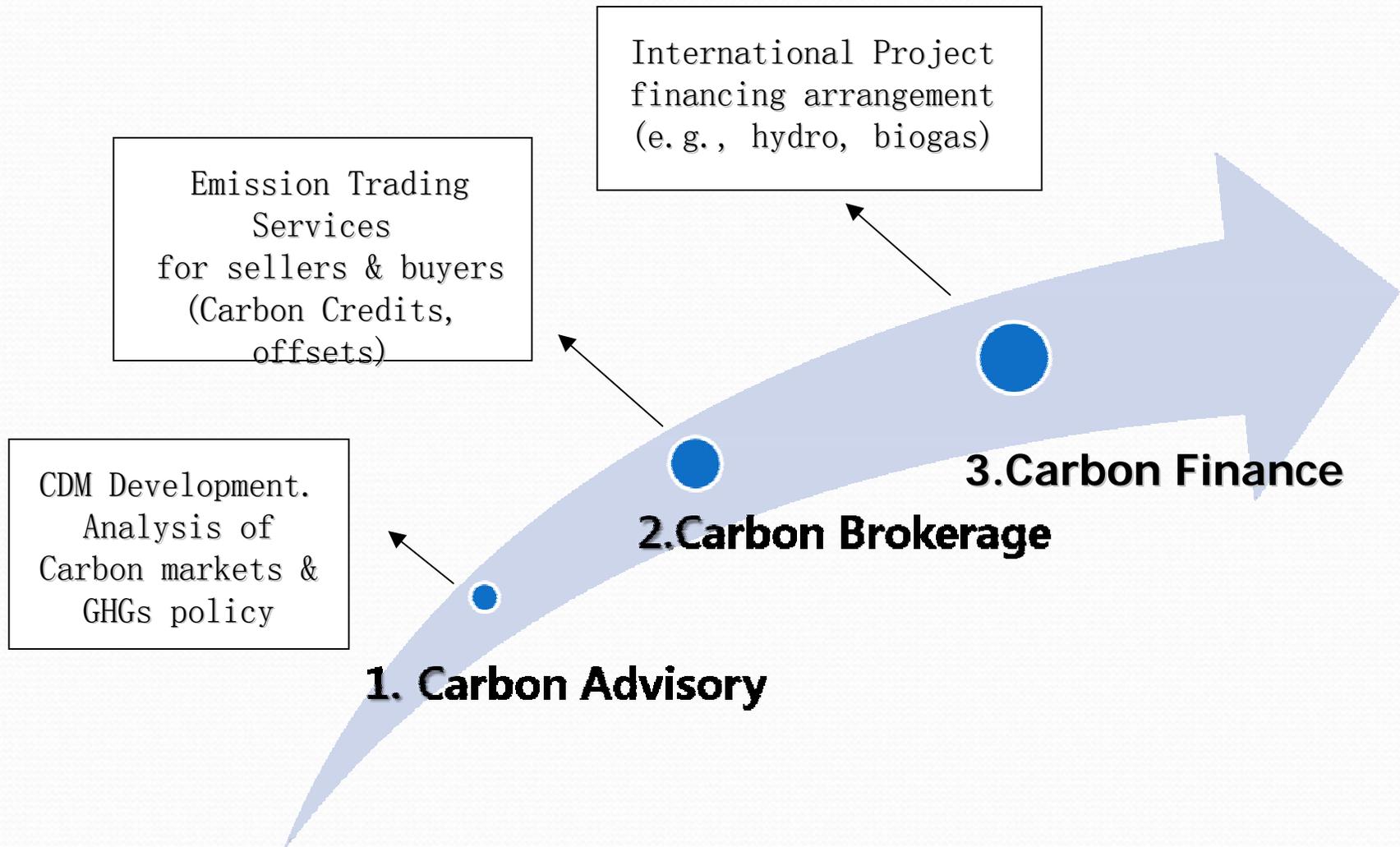
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United Nations ESCAP, APCAEM and
Ministry of Agriculture and Cooperation of the Royal Government of Thailand
Regional Forum on Bioenergy Sector Development
“Challenges, Opportunities and the Way Forward”
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Outline

- **Brief Company Introduction**
- **Biofuel Production (Project Management, Project development level analysis)**
- **Biofuel Production (CDM level analysis)**
- **Words on Current Methodologies**

● Business Scope of Baraka Global Advisors



● Environmental Concerns in Biofuel

1. Land Use Competition (Sumatra Example)

- Loss of habitats
- Endangering or extinction of rare species
- Obstruction of migration patterns and corridors
- Degradation of soils and water bodies

2. Food crops V.S. Biofuels

- Alleviate poverty
- Food Security (Malaysia example)

3. Loss of Biodiversity

- Preferring crop varieties and farming schemes
- Ecological stepping-stones

● Environmental Concerns in Biofuel

4. Soil Erosion and Other Soil Degradation

- Increase of annual biofuel crops could lead to soil erosion and other soil degradation
- Use of agriculture and forestry residues could reduce human creation and soil carbon, and increase plant nutrient exports

5. Water Use and Water Contamination

- Water scarcity
- Water contamination arise from agrochemicals (Jelly Fish – Korea)

● Social Impacts and Human Health

- Restrictions on access to land for small-scale farming
- Labor conditions – Labor laws & protection
- Human health – Agricultural methods
- Air pollutants – Biofuel making is an Industrial process

● Challenges

Challenges from future biofuel developments in developing countries

- Diversion of land from into energy crops
- Changes of supply and prices of food (economics of food)
- Access to relevant energy technology

● Project Development Level (PM-EPC) - Life cycle Analysis of Biofuel

Three key input parameters –

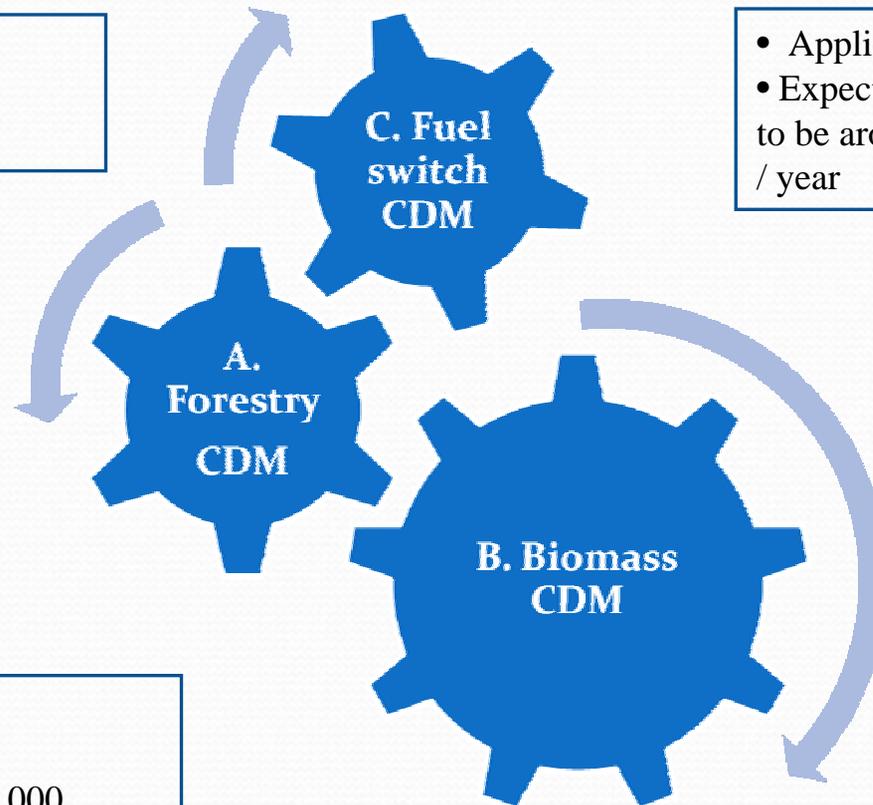
- allocation method for co-product/transport (Net Emission Reductions)
- N₂O emissions which evolve from nitrogen fertilizer application and leaf litter decomposition
- soil carbon dynamics (biomass farming)



- Maximizing GHG savings with biofuels benefits
- GHG reductions (20% - 90%)
- More efficient land use

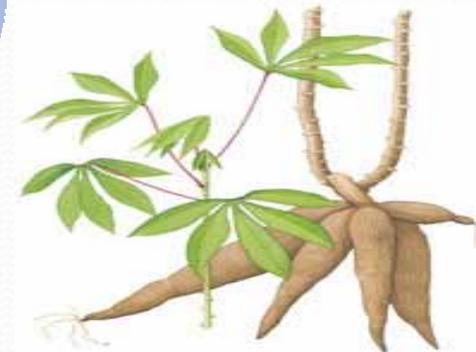
How does Biofuel CDM works?

- Applicable Methodology :
AR-AMS 1 / AR-AMS 4



- Applicable Methodology : ?
- Expected CERs amount : estimated to be around 140,000 - 180,000CERs / year

- Applicable Methodology :
ACM006/ AM0036
- Expected CERs amount : 30,000 CERs/year



● Biofuels at the CDM Level

Biofuels CDM project:

Emission Reduction = Baseline – Project Activity - Leakage

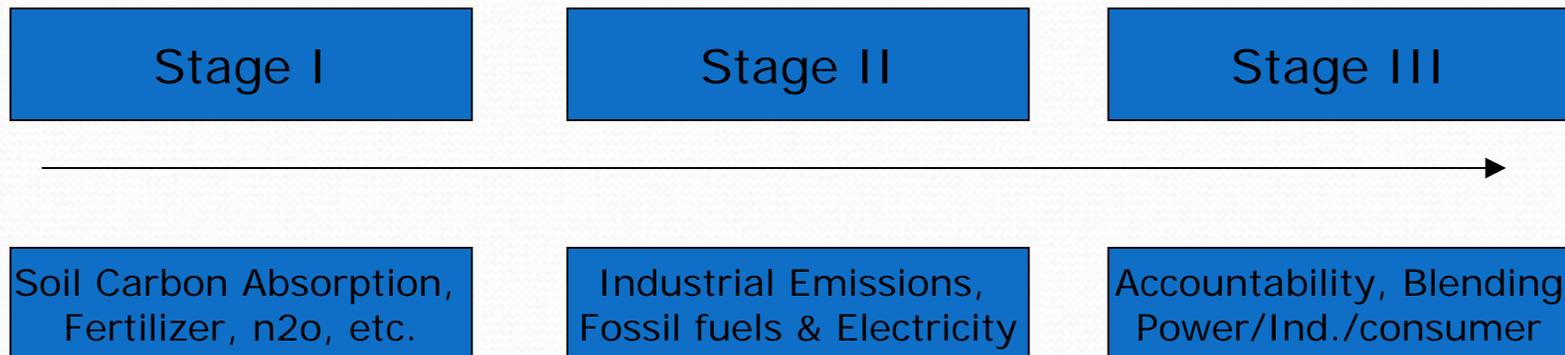
Biofuels CDM project - Ambiguity

Stage I – Farming Period (Fertilizer, carbon absorption, etc)

Stage II – Biofuel Production

Stage III – Sales and Marketing of Biofuel

- Production CDM V.S. Fuel Switch CDM
- Project Developers V.S. Owners (Ownership of Carbon Credits)



● Suitability analysis of biofuel projects under the CDM

1. Assessment criteria

- Significant greenhouse gas reduction?
- Additionality – Would the project be viable w/out CDM?
- Monitor-ability, Baseline & Project Activity, End-Users
- Sustainable development contribution
 - Energy security of supply
 - Employment
 - Natural environment

Overall viability

- Achieve a minimum internal rate of return
- Help in long-term sustainability of the project

● Suitability analysis of biofuel projects under the CDM - II

2. General Barriers (things you should tell your CDM project developers)
 - Regulatory barriers – What are the domestic law?
 - Technological barriers
 - Market potential
 - Biomass supply – Quantity, proximity (PROJECT ACTIVITY)

Meth. No	Type	Description	GHG reduction	Host country	Title	Remark
69	Biofuel	Biodiesel from oil seeds on Jatropa and Pongamia trees (=NM108)	26 ktCO2	India	30 TPD Biodiesel project in Andhra Pradesh, India	C
82	Biofuel	85000 litre ethanol/day from sugar cane molasses for a 10% blend	53 ktCO2	Thailand	Baseline methodology for the production of sugar cane based anhydrous bio-ethanol for transportation using LCA (Khon Kaen fuel ethanol project)	C
108	Biofuel	Biodiesel from oil seeds on Jatropa and Pongamia trees & waste oil (=NM69)	26 ktCO2	India	Biodiesel production and switching fossil fuels from petro-diesel to biodiesel in transport sector - 30 TPD Biodiesel CDM Project in Andhra Pradesh, India. Clarifications submitted	C
109	Biofuel	Methyl-ester biodiesel from sunflower on unused land (=NM129)	33 ktCO2	Thailand	Sunflower Methyl-Ester Biodiesel Project in Thailand	C
129	Biofuel	Methyl-ester biodiesel from sunflower on unused land (=NM109)	33 ktCO2	Thailand	Generalized baseline methodology for transportation Bio-Fuel production project with Life-Cycle-Assessment	C
142	Biofuel	10% Palm oil methyl ester added to diesel	218 ktCO2	Thailand	Palm Methyl Ester - Biodiesel Fuel (PME-BDF) production and use for transportation	C
180	Biofuel	Production of waste cooking oil based biodiesel for use as fuel	123 ktCO2	China	BIOLUX Benji Biodiesel Beijing Project	A
185	Biofuel	Baseline methodology for the production of sugar cane based anhydrous bio-ethanol for transportation using LCA.(=NM82)	40 ktCO2	Thailand	Khon Kaen fuel ethanol project	B
223	Biofuel	Baseline methodology for Biodiesel production from imported or domestically sourced biomass-derived oil, using a life cycle analysis approach.	205 ktCO2	South Africa	Western Cape Biodiesel Project	C
224	Biofuel	Bio-diesel from crude palm oil/ Jatropa oil/oil from any another oil crop for consumption as replacement of liquid fossil fuel	60 ktCO2	India	Manufacturing of Bio-diesel from Crude Palm oil and Jatropa Oil	C
228	Biofuel	Biodiesel from oilseeds in dedicated plantations on severely degraded land and underutilized agricultural land. Consumers is a captive fleet within the boundary.	335 ktCO2	Brazil	AGRENCO Biodiesel Project in Alta Araguaia	WIP
233	Biofuel	Methodology for vegetable-derived fatty acid methyl ester biodiesel production for transportation (=NM142)	143 ktCO2	Thailand	Palm Methyl Ester – Biodiesel Fuel (PME-BDF) production and use for transportation in Thailand	WIP

A: Means approved by the Executive Board

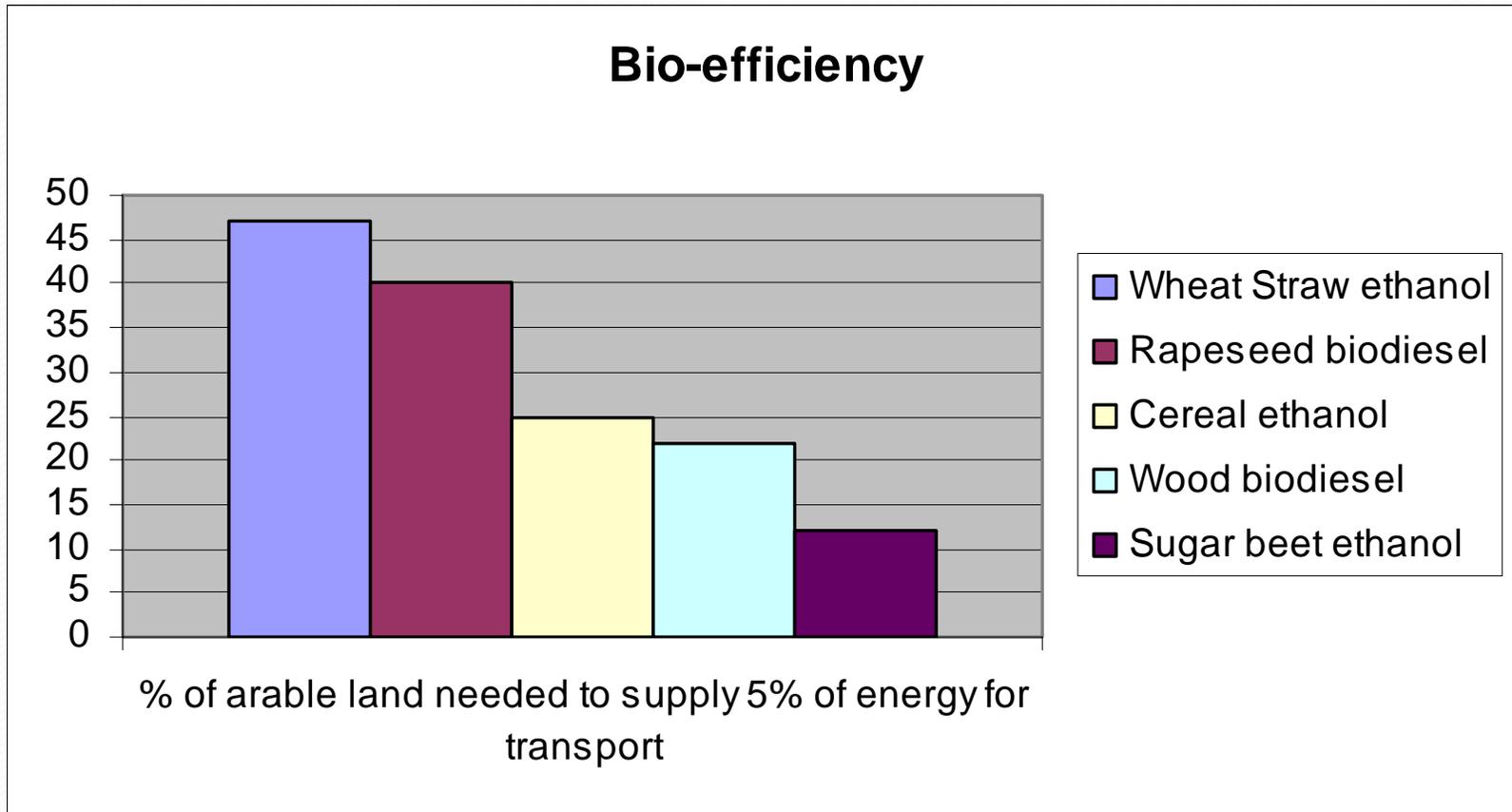
B: Means that the project participants/EB must make some changes

C: Means that a new Project Design Document must be submitted

WIP: Work In Progress

Source: UNEP–Risoe

Comparative corps yields (UK)



Source: Royal Society

Conclusion

- Oil prices, alternative energy needs
- PE, FIs & MNCs
- Industrial activities & employment
- Income of agricultural communities
- Social and environmental concerns
- 2nd Generation technology is needed
- CDM risks – Methodologies Development (Hard to generalize, unify)
- UNFCCC Politics (Brazil, Indonesia, US, China, etc)
- Careful Kyoto policies developing monitoring & application

- **Challenge = Opportunity (CERs is substantial)**
- **CDM - to support “worthwhile” projects**

Thank you!

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